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ABSTRACT

The purpose of this study was to describe college students' AIDS communication and explore the relationships between AIDS communication, involvement, and sexual behavior. A non-random sample of 334 college students was surveyed. AIDS message discrimination and multiple indicators of involvement were tested for associations with sexual behavior change. The cognitive, behavioral and communication involvement dimensions were moderately correlated with sexual behavior in both single and multiple sex partner subsamples. Affective involvement did not emerge as a significant predictor of sexual behavior change. Prevalence message discrimination was also moderately associated with sexual behavior change in the single sex partner group; personal consequences message discrimination was correlated with sexual behavior change in the multiple partner group. The findings generally support the elaboration likelihood model and suggest that achieving heightened issue involvement through AIDS communication is an important intermediate step toward modifying sexual behavior. (Four tables of data are included; 36 references are attached.) (Author)

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College Students and AIDS: AIDS Communication and Involvement Effects on Sexual Behavior

Abstract

The purpose of this study was to describe college students' AIDS communication and explore the relationships between AIDS communication, involvement and sexual behavior. A non-random sample of 334 college students was surveyed. AIDS message discrimination and multiple indicators of involvement were tested for associations with sexual behavior change. The cognitive, behavioral and communication involvement dimensions were moderately correlated with sexual behavior in both single and multiple sex partner subsamples. Affective involvement did not emerge as a significant predictor of sexual behavior change. Prevalence message discrimination was also moderately associated with sexual behavior change in the single sex partner group; personal consequences message discrimination was correlated with sexual behavior change in the multiple partner group. The findings generally support the elaboration likelihood model and suggest that achieving heightened issue involvement through AIDS communication is an important intermediate step toward modifying sexual behavior.

College Students and AIDS: AIDS Communication and Involvement Effects on Sexual Behavior

The U.S. Centers for Disease Control (CDC) in Atlanta recently reported that by the end of July, 1991, 186,895 cases of AIDS had been diagnosed in the United States. Of these reported cases, over 118,000 (63%) are known to have resulted in death (Centers for Disease Control, 1991). This figure is greater than the combined casualties of the Vietnam and Korean wars.

The seriousness of the problem becomes more evident when considering that between one and 1.5 million people in the United States are believed to be infected with HIV. Since symptoms have not yet manifested themselves, most of these individuals are unaware of their illness and may infect others as a result of their ignorance (Presidential Commission, 1988).

In its earliest stages, the epidemic was believed to be confined primarily to homosexuals or intravenous drug abusers in cities like San Francisco and New York. However, "since cases acquired through heterosexual transmission are the fastest growing group of AIDS cases in the U.S." (Institute of Medicine [IOM], 1988, p. 40), it is now believed the greatest threat lies in the potential for AIDS to spread rapidly throughout the heterosexual population.

Research evidence indicates HIV is transmitted primarily "through sexual contact and the use of contaminated needles" (IOM, 1988, p. 39-40). Consequently, educational efforts intended to foster behavior change are the only means available to stem the spread of HIV infection (IOM, 1988).

Formal attempts to inform and educate the public through government funded multi-media communication campaigns (the "Understanding AIDS" mass mailing and the "America Responds to AIDS" public service campaign are perhaps the most notable) have been reasonably successful at imparting knowledge.

Across the U.S. there is widespread awareness of AIDS and the ways in which HIV is spread. The National Center for Health Statistics has been surveying the adult population's knowledge and attitudes about AIDS since August, 1987. Provisional results of a recent survey (Hardy, 1991) indicate that most people know that AIDS can be transmitted by sexual intercourse (87%) and that there is no cure for the disease (86%). Yet, few Americans perceive themselves to be at risk of contracting AIDS (Hardy, 1991) and this appears to be particularly true for college students (Edgar, Hammond & Freimuth, 1989).

Despite the sheer volume of AIDS communication in the United States, the Chronicle of Higher Education has reported that while college students may possess considerable knowledge of AIDS, they still do not perceive themselves as vulnerable (Mangan, 1988). This is reflected in their sexual behavior.

At the University of Texas at Austin, 94% of sexually active students responding to a survey reported they "did not consider themselves at high risk of contracting AIDS" (Mangan, 1988, p. 1), and 55% said they did not use condoms. More than 60% of Oregon State University students responding to a survey indicated they had sex in the past year without using a condom.

Therefore, communication efforts intended to change behavior address a college audience which is best characterized as low in personal

involvement--they do not believe they need the information. It is also unclear what communication media and messages are most persuasive and effective at achieving behavior modification with regard to this serious health issue. This is the problem at hand.

This paper reports the results of part of a study on AIDS and college students. It specifically focuses on the relationship between AIDS communication, involvement and sexual behavior.

AIDS Communication

Understanding the complexity and multifaceted nature of AIDS communication requires a broad theoretical perspective. AIDS communication is all around us and because of its pervasiveness few communication models do it justice.

Becker's mosaic concept of communication provides an appealing perspective on the interaction of mass and interpersonal communication sources, messages and information (Becker, 1987). Becker conceptualizes the communication environment as a mosaic comprised of many communication sources (mass and interpersonal), containing a virtually limitless number of information increments about an infinite number of topics. People travel a path "through the mosaic" (Becker, 1987, p. 19), affecting and being affected by the communication that surrounds them.

AIDS communication incorporates all forms of communication, mass mediated and interpersonal, intended and unintended. Mass mediated communication is an important part of the AIDS issue, with the print and broadcast media providing coverage that takes many forms.

Government funded AIDS communication campaigns have been implemented. The "Understanding AIDS" booklet mass mailed in 1988 to U.S. households was the first high profile attempt to reach the population on a grand scale.

In the past few years the "America Responds to AIDS" public service advertising campaign has aired more frequently and during more heavily viewed dayparts than at the campaign's outset. Most recently, the CDC has developed several very blunt PSAs with the goal of encouraging personal risk assessment (Chase, 1990). In one, the announcer exhorts people to talk to their partner about AIDS, while another features real-life HIV infected persons who talk about how they contracted the virus.

The news media have also followed the issue closely, from the discovery of AIDS and the HIV infection, to updates on accepted treatments such as AZT and Bristol-Myers' recently FDA approved DDI. And while no issue receives a high level of news coverage over an extended period of time, AIDS has received its fair share.

Topics such as the AIDS quilt, the annual International AIDS Conference, AIDS discrimination, and advances in AIDS research have been covered regularly in all major media. Fundraisers and celebrity victims and their families get a good deal of news coverage. Lately, the media have closely followed the debate in the medical community over HIV transmission by health care providers (the Kimberly Bergalis case) and the need to test health professionals.

The topic of AIDS has even reached television entertainment programming such as talk shows (e.g. Oprah Winfrey) and the plots and character lines of soap operas and made-for-TV movies. To be sure, AIDS has become part of the fabric of our mass communication environment.

On the other end of the communication spectrum, AIDS is now also frequently discussed in school classrooms and among friends and family. States and their respective school systems have established policies regarding AIDS education, with some 30 states requiring elementary or secondary schools to provide AIDS instruction (Ruffenach, 1990).

Perhaps most significant from a communication perspective is the willingness of people to talk about AIDS with friends and family. For many people AIDS is a subject which elicits fear and uneasiness. Nonetheless, the mass media appear to have served as a catalyst, stimulating discussion related to news reports, PSAs and entertainment programming. Indeed, interpersonal communication about AIDS has served to reinforce the issue in the minds of Americans and may prove to be the most efficacious method of achieving behavior change (Edgar et al., 1989).

Research on College Students and AIDS

Studies of college students and AIDS were first reported by researchers in the fields of medicine and public health (e.g., McDermott, Hawkins, Moore, and Cittadino, 1987; Gaines, Iglar, Michal, and Patton, 1988; Dorman and Rienzo, 1988) in the late 1980s.

Knowledge was the central measure in many of these studies. College students were found to generally possess high levels of basic AIDS knowledge but as the complexity of knowledge items increased students' information holding decreased (Dorman & Rienzo, 1988). The most commonly identified AIDS information sources were television and newspapers (McDermott et al., 1987) and it was determined that gender differences in AIDS knowledge were negligible (Gaines et al. 1988).

Attitudes held about the AIDS epidemic and persons with AIDS were similarly probed and women students proved to be less prejudiced and more empathetic in their feelings than men (Gaines et al., 1988).

Several researchers focused their attention on AIDS related changes in sexual behavior. Carroll (1988) measured the relationship between concern about AIDS and modification of sexual behavior in a sample of college students. Interestingly, while nearly half the students claimed their concern had affected their sexual behavior, measures of coital frequency and relational involvement were not associated with the claimed effects.

In a comprehensive review of published reports concerning AIDS and behavioral change among various risk groups, Becker and Joseph (1988) found the results across studies to be inconsistent. Studies of homosexual and bisexual males and intravenous drug users generally demonstrated rapid, yet incomplete alterations in sexual or drug-use behavior. Several of the longitudinal studies of individual behavior within these groups revealed considerable recidivism.

Among heterosexual adolescent and young adult populations Becker and Joseph (1988) found behavior change to be less common. The authors concluded that additional research was needed to further understand the determinants of behavior change.

Communication researchers have begun to answer that call. Neuwirth and Dunwoody (1989) found in their study of students' AIDS-related behavior change that self worry (which was used as a marker for involvement) and global AIDS communication (an index of exposure to interpersonal and mass mediated AIDS messages) were significantly correlated with sexual behavior change. They also noted small but

significant independent variable interaction effects on students' reported behavioral responses to AIDS.

More recently, Cline, Freeman and Johnson (1990) studied differences across groups of college students who talked and did not talk to their sexual partners about AIDS. Four groups were identified: safe-sex talkers, general AIDS talkers, nontalkers and want-to-be talkers. Much to the researchers' consternation, few differences in sexual behavior or reported behavior changes were found across these groups.

Theoretical Framework

Models of behavior change developed by researchers in health communication suggest that while communication activity is essential to the change process, there are other variables which influence behavior modification (Leventhal, Safer & Panagis, 1983). Communication researchers recognize that behavior change is a complex process which involves the interaction of multiple factors.

Involvement

The concept of involvement is of interest to researchers in many fields because of its apparent influence on information processing, attitudinal and behavioral outcomes. Not surprisingly, its widespread use has led to different conceptual and operational definitions.

Salmon (1986b) has delineated these varying perspectives on involvement . In the present study involvement was defined as issue involvement.

Issue involvement exists when an issue has personal meaning for an individual. Basically, the issue is seen as intrinsically important (Sherif &

Hovland, 1961) and people perceive the issue to have future consequences for them (Apsler & Sears, 1968). Ray et al's., hierarchy-of-effects model (1973) and Petty and Cacioppo's elaboration likelihood model (1979, 1981a,b, 1984) both identify issue involvement as a significant mediating factor in the processing and outcomes of persuasive communication. And, as Salmon observes, both theories "conceptualize high involvement as a form of heightened salience" (1986b, p. 255).

The elaboration likelihood model (ELM) of persuasion advanced by Petty and Cacioppo (1979, 1981a,b, 1984) posits that when individuals are presented with a topic of high personal relevance they are motivated to closely scrutinize and evaluate incoming information. This is referred to as central processing. However under conditions of low involvement, when individuals are confronted with an issue of low salience, persuasive arguments are processed peripherally. Central processing outcomes are thought to be predictive of behavior change.

Ray et al., (1973) proposed the outcomes of persuasive communication vary with the receiver's level of involvement thereby creating different hierarchies of effects. High involvement situations such as the AIDS issue with clear differences among alternative courses of action would evoke a learning hierarchy. Consequently, behavior change is preceded by cognitive and affective change. Yet, for at risk populations such as college students other hierarchies are employed.

Later work in political communication (Rothschild & Ray, 1974; Rothschild, 1978) emphasized the nature of involvement as, "a phenomenon that occurs when most or all people who interact with a situation develop a high level of concern for their subsequent behavior in the situation" (Houston & Rothschild cited in Salmon, 1986b). While the

salience of an issue or situation may not be uniformly perceived by all individuals, AIDS has real implications for all sexually active college students.

Research Questions and Hypotheses

There is a clear need to understand the function of mass and interpersonal communication in the process of AIDS related behavior change. It is important to understand how exposure to different communication sources and types of messages contribute to the behavior change process. Moreover, involvement may be a significant mediator of that process.

The purpose of this study was twofold. First, it sought to describe students' AIDS communication experience. Second, this study attempted to assess and explain the relationships between AIDS communication, involvement and sexual behavior. The descriptive portion of this study was framed by the following research questions:

1. What is the nature of college students' AIDS communication? What are the sources and content of these communication messages?

2. How have college students' modified their sexual behavior in consideration of the AIDS threat?

To test the relationships between these variables, it was hypothesized that:

1. College students' AIDS communication is significantly related to sexual behavior change.

2. College student's degree of involvement with the AIDS issue is significantly related to sexual behavior change.

Methods

Subject Selection

A convenience sample of approximately 400 students enrolled in two sections of an interpersonal communication course at a major university in the midwestern United States were asked to participate. The data were collected during the Winter 1990. The final sample totaled 334 students willing to participate in the study.

Outcome Measures

The instrument, comprised of both open and closed-ended items, was in-part created by combining and adapting items used by other AIDS communication and involvement researchers. Components of the questionnaire were modeled on previous studies of involvement (Chaffee & Roser, 1986), and message discrimination (Clarke & Kline, 1974; Salmon, 1986a; Finnegan, Viswanath, Hannan, Weisbrod & Jacobs, 1989), but were essentially newly created for the purpose of this study. A copy of the research instrument is available from the authors.

Since much of the survey was previously untested, it was pilot tested for validity and reliability purposes. As a result of this exercise, the instrument was then revised with several items reworded, others dropped, and directions clarified.

Students' exposure to AIDS communication was operationalized utilizing a technique known as message discrimination. The concept of message discrimination was originally advanced by Clarke and Kline (1974) as an alternative to traditional measures of mass media exposure. They argued message discrimination would be a better predictor of

knowledge about public issues than "time spent" measures which amount to the time spent with, or frequency of exposure to, various media.

Message discrimination is a measure of the bits of actual content an individual recalls from his/her information environment. In other words, message discrimination is a "content based measure of exposure to information sources" (Finnegan, Viswanath, Hannan, Weisbrod, and Jacobs, 1989, p. 772). The concept is generally operationalized by "asking respondents to recall, on a certain topic, specific messages they have read, seen, or heard in the past week or month" (Salmon, 1986a, p. 364). Respondents are then given time to provide the messages they recall in an open-ended format.

The open-ended message discrimination items were designed to gather information about respondents' exposure to AIDS communication from 6 mass media and 3 interpersonal channels. Subjects wrote their responses to questions asking them to recount the AIDS messages they were exposed to in the past month from various communication sources.

Separate behavior change indices were created for students involved in monogamous relationships and those with multiple sexual partners. The single and multiple partner sexual behavior scales consisted of six and four items, respectively. Each item was scored on a 4-point Likert scale, from "strongly disagree" to "strongly agree."

The involvement scale was constructed by the researcher based on insights from the involvement literature. The involvement scale was intended to be multidimensional. Its 15 items gauged respondent involvement by assessing cognitive, affective, behavioral, and communication involvement. All items were scored on a 4-point Likert scale, from "strongly disagree" to "strongly agree." The socio-

demographic items included gender, race, marital status, age and level of sexual activity.

Survey Administration

The surveys were distributed to students as the administrator summarized the purpose of the study. Due to the personal nature of issues raised in the survey, students were assured of their anonymity and reminded they were not required to answer any item with which they felt uncomfortable. Students choosing not to participate were given AIDS literature to read. There was no incentive offered for participation.

Although the questionnaire was essentially self-administered the first part of the survey was conducted orally in what is best described as a group-administered interview (Sudman & Bradburn, 1982). This was necessary to implement the message discrimination data collection technique which prescribes the use of "question cycles" (repetition) to elicit the greatest number of recalled AIDS communication messages (Finnegan et al., 1989).

Instructions on how to complete the message discrimination questions were provided in each survey and were also read aloud by the administrator. The administrator read each message discrimination item aloud, paused for approximately 1 minute, then repeated the question before moving to the next item. After completing the message discrimination items participants were instructed to read all directions carefully and complete the remainder of the questionnaire. When students were finished the questionnaires were collected and several brochures on AIDS and college students were offered to the participants.

Data Analysis

The analysis of data was divided into two parts, descriptive analyses and correlational analyses. Frequency distributions, proportions and measures of central tendency and dispersion were used to describe student responses.

Responses to the message discrimination items resulted in a large number of open-ended statements. These data were content analyzed (Krippendorf, 1980). The content categories were initially created based on the researcher's preconceptions of AIDS communication and a review of a sample of the open-ended responses. The "message" served as the unit of analysis within the open-ended responses. A message was defined as a complete thought, point, or idea related to AIDS. Depending on each respondent's brevity, one sentence could have several messages, while several sentences could have just one message.

The coding scheme, which ultimately included eight categories, was constructed to maximize the exclusivity of each category, and the exhaustivity and reliability of the system as a whole. A pilot test of the category system was conducted and the intercoder reliability yielded a Scott's pi of .81.

With minor modifications to the category definitions, the schema was used to categorize all AIDS messages discriminated. The intercoder reliability was again assessed; the coders agreed on over 87% of their classifications and the Scott's pi was .85.

Pearson Product Moment Correlation coefficients were calculated to determine the degree to which AIDS communication, involvement and sexual behavior were related. Finally, multiple regression techniques were utilized to assess the linear relationship between the concepts of interest.

Results

Descriptive Analyses

Socio-demographics. Just over half the respondents (53%) were female and the group was predominantly white (87%) with blacks and Asians representing an additional 10% of the participants. Most of these students were single (89%) and a small number reported they were either engaged (5%) or married (4%). Subjects ranged in age from 18 to 47 years; their average age was nearly 21 years. Seventy-nine percent of the participants reportedly engaged in sex, defined as oral or sexual intercourse, in the past year. Of those who reported sexual activity, 48% reported having more than one partner.

AIDS Communication. A total of 2024 AIDS messages were discriminated by the 334 respondents. The number of messages recalled by each individual ranged from 0 to 22. Participants' recalled an average of 6 messages, or less than one message per source.

The particular messages themselves and the way in which they were reported varied substantially across students. The vast majority of prevention messages centered on condom use and intravenous drug abuse (e.g., "Use Condoms" or "Avoid dirty needles").

The personal consequences messages centered on fear, illness and dying such as, "If I get AIDS I'd get sick and die" or "I talk with my friends about how afraid I am of getting it [AIDS] and how I would die if I did."

AIDS transmission messages were relatively consistent in their theme. Most students recalled messages that basically stated, "You can get AIDS from sex, sharing needles, and contaminated blood."

Prevalence messages varied in the specific information conveyed. Some referred to the epidemic's proportions ("Over 1 million people have

AIDS"); others identified at risk groups ("Heterosexuals can get AIDS too").

Related deaths and treatment messages plainly recalled reports of AIDS fatalities such as, "Rock Hudson died from it" and "Doctors found AZT helps," respectively. Moreover, social consequences messages ranged broadly with comments such as, "There was a protest in New York about it" and "A boy in Indiana wasn't allowed in school because he had AIDS."

Table 1 (attached) displays a crosstabulation of the communication sources with the AIDS message content categories. Looking at the channel marginals, we see the print media accounted for the largest proportion of messages discriminated (41%). Based on the students' message recall, each communication channel appears to emphasize certain types of AIDS communication. The broadcast media cover a wide range of content but nearly 30% of the messages discriminated from radio and television concerned AIDS prevention.

The print media, similarly, appear to cover a wide range of content. However, unlike the broadcast media, 3 categories--prevention (21%), transmission (18%), and prevalence (18%)-- dominated the content recalled.

Unlike the broadcast and print media, interpersonal messages seem to be highly focused on the personal consequences of AIDS. The messages discriminated from the interpersonal channels fell primarily into the personal consequences (42%) and prevention (21%) categories.

Based on the messages discriminated, prevention messages are the most common thread of content across all message sources. Aside from prevention messages, the message content most often recalled varies

across communication channels. Indeed, a moderately strong relationship exists between channel type and content (Cramer's V=.32).

Sexual Behavior. While the sexual behavior items might be considered threatening to respondents and subject to the weaknesses of self-report techniques, the data are seemingly true to the students' reported behavior.

Over 62% agreed or strongly agreed that they "ask questions about my partner's sexual history." Yet, only 21% agreed or strongly agreed they "make sure my partner does not have AIDS by asking for AIDS test results," even though this is the only way to be certain a partner is AIDS free.

A scant 9% of the multiple partner subsample reported they ask their partner for AIDS test results, a lower proportion than the single partner subsample despite the obvious increased risk of contracting AIDS. Curiously, even though these subjects reported having multiple partners in the past year, over 63% agreed or strongly agreed they decreased the number of partners with whom they have sexual relations. Still, just 47% agreed or strongly agreed that they always use condoms indicating these students have not adopted the most effective method of preventing sexual transmission of AIDS aside from abstinence.

Overall, it appears that students are exhibiting some caution in their sexual behavior in response to the AIDS epidemic. However, the steps taken, such as asking about a partner's sexual history or decreasing the number of sexual partners, are not necessarily effective. The consistent use of condoms by such a relatively small proportion of these groups is cause for alarm, as is the even smaller percentage of respondents who ask for HIV test results.

Relational Analyses

Measure Quality. The Chronbach's alpha reliability estimates for the involvement and sexual behavior scales and subscales ranged between .67 and .75 for the involvement scale. These reliability scores were deemed acceptable for the purposes of this study.

The involvement scale was designed to measure 4 dimensions of involvement. A factor analysis was conducted under the a priori assumption that a 4 factor solution would emerge, however, one, two, and three factor solutions were also tested. The results of the factor analysis are summarized in Table 2 (attached).

The analysis reveals a relatively clean 4 factor solution with just two of the fifteen items deleted due to low or ambiguous item to factor correlations. All four factors were tested in the correlation and regression analyses.

Sexual Behavior. Correlates of sexual behavior change are reported as bivariate relationships for the single and multiple partner subgroups in a correlation matrix (Table 3 attached).

Both indices were primarily correlated with the same involvement dimensions. Cognitive and communication involvement were the most significant correlates (.31 and .21, respectively) of sexual behavior in the single partner subsample. Prevalence message discrimination was also moderately associated (.31) with sexual behavior in this group.

For the multiple partner subsample several predictor variables were moderately correlated with sexual behavior. These included behavioral, cognitive, and communication involvement which were the most significant correlates (.41, .35, .31, respectively) of the participants' sexual behavior. Interpersonal and personal consequences message

discrimination were both correlated with multiple partner sexual behavior change, but this is explained by the high degree of collinearity between these two independent variables.

The results of the correlational analysis support the research hypotheses for both the single partner and multiple partner subsamples. Several of the involvement and AIDS communication (message discrimination) measures were significantly associated with students' sexual behavior change scores.

To further evaluate these relationships, a stepwise regression of sexual behavior on the independent variables was performed. The results are presented in Table 4 (attached).

Across both subsamples, cognitive involvement was a significant predictor of sexual behavior. For the single partner group, prevalence message discrimination explained the greatest amount of variance (10%), closely followed by cognitive involvement which accounted for an additional 8% of respondent sexual behavior variance. The total R^2 for the prediction equation was 17%.

The best predictor of sexual behavior in the multiple partner subsample was behavioral involvement (17%), with cognitive involvement explaining 4% of the variance. A total of 21% of the variance in sexual behavior was explained by these two variables.

Discussion

The results demonstrate that college students' AIDS communication is relatively rich with many different kinds of messages recalled from both mass mediated and interpersonal sources. It was shown that discrimination of personal consequences and prevalence messages from

print and interpersonal sources are related to sexual behavior change. As predicted, students' cognitive, behavioral and communication involvement are also correlated with sexual behavior change. Ultimately, it was demonstrated that behavioral and cognitive involvement and prevalence message discrimination are the best predictors of behavior.

These findings have both theoretical and practical implications for AIDS communication development and our understanding of the complex behavior change process. Based on the results of this study it appears imperative that we continue to refine our AIDS communication.

Involvement as an Intervening Variable

The results of this study provide some insights about involvement as a theoretical construct. These observations revolve around the conceptualization of involvement, how it relates to behavior and the emerging multiple indicators approach to operationalizing the construct.

Generally, the correlations reported support the elaboration likelihood model which predicts that people at low and high levels of issue involvement will differentially process information and exhibit higher order (read behavioral) effects. These data confirm differential information processing most notably with the recall of communication which focuses on the personal consequences of AIDS. Personal consequences message recall was shown to be positively related to involvement, particularly the cognitive, behavioral and communication dimensions. High involvement was also shown to be directly related to sexual behavior change.

As the only AIDS communication message found to be consistently and moderately related to the involvement dimensions, personal

consequences messages appear to offer the most direct route to heightening college students' involvement with AIDS. With involvement seen as a intervening factor in the behavior change process, one intermediate goal set for communication messages should be to stimulate involvement by emphasizing the personal consequences of contracting AIDS. This contention is echoed by Flora and Maibach (1990) whose findings suggest emotional appeals are effective at inducing greater involvement in low involvement viewers of PSAs.

Influencing behavior is an elusive goal subject to the inconsistencies and unpredictability of people. And there are so many reasons why people respond differently to communication stimulii. Students with just one sex partner appear to be most strongly influenced by prevalence messages, primarily recalled from print media, working in concert with heightened cognitive involvement to produce behavior change. However, students with multiple sex partners need a more substantial "push" to encourage behavior modification.

While AIDS message discrimination is related to behavior change in this subgroup, the behavioral and cognitive involvement dimensions are the best predictors of change. Interestingly, as operationalized behavioral involvement represents behavior change on another level. High behavioral involvement was primarily anchored in taking steps to acquire AIDS information such as calling an AIDS hotline or attending a workshop. These are not routine behaviors of young adults, and only those concerned about AIDS are likely to take these steps. Multiple partner students may require higher levels of involvement and need to have multiple facets of involvement stimulated to effect behavior change.

The multiple indicators used to measure involvement in this study reflect a growing trend in communication research. Chaffee and Roser (1986) suggested that due to equivocal results with multiple indicators of involvement, the roots of each dimension may require review to determine if the various components are conceptually distinct. Based on the results of this study it can be argued that each involvement indicator represents a distinct but related dimension of involvement, and that the type of involvement activated in a person may vary according to individual differences.

Implications for AIDS Communication

The most important goal AIDS communication can achieve is assisting in the modification of behavior which places students "at-risk". As formal AIDS information and education campaigns are designed, highly involving communication media should be utilized and messages created.

Heavy use of interpersonal and print media is suggested. As the channels most strongly associated with involvement, increased interpersonal contact and student exposure to AIDS information in print will enhance student involvement.

Within college settings there are several underutilized routes to increased interpersonal communication. Dormitories present an excellent opportunity for sharing AIDS information through dormitory directors and floor resident assistants. Fraternities, sororities and other groups in which members are often highly involved can encourage their members to work with AIDS patients as part of their community service agenda. Medical experts or even AIDS patients can be brought in to speak about AIDS. Moreover, the college or university can take a leadership role by

sponsoring an AIDS Awareness Week and AIDS can be introduced as an applied learning unit in many fields of study.

Equally as important as the channel of communication is the message. Communication strategies that would enable students to more easily ask their partners for HIV test results or request that a condom be used during sex need to be emphasized.

Edgar et al. (1989) described the many barriers which inhibit communication about AIDS safe sex and observed that skillful interpersonal interaction is needed to achieve behavioral change. One approach to enhancing the relevant interpersonal skills is to provide communication skills training in school-based education programs. Role-playing can be an effective method for teaching high-school and college students how to utilize conflict management or persuasion strategies to deal with their sexual encounters.

Persuasive strategies can be effective in convincing an unwilling partner to alter his or her behavior. Edgar et al. suggest that by first determining that her partner does not want to use a condom because he feels it will diminish his sexual pleasure, a woman can "portray condom as a positive, sensual experience rather than a necessary disease prevention measure" (1989, p. 7). These illustrates the type of persuasion skills that can be acquired by male and female college students through proper coaching.

Another approach to encouraging behavior change is to increasingly focus communication campaign content on the interpersonal issues and sexual situations so students can be shown how to communicate to achieve agreement on safe sexual behavior. Certain communication media would likely be more effective than others in delivering these

behaviorally based messages. The results presented here again suggest more involving print and interpersonal channels offer better communication alternatives than broadcast media.

Nevertheless, what seems critical is the need to use various communication sources in a complementary fashion. Basic facts communicated through radio and television can be reinforced with greater detail in newspapers. Interpersonal sources such as teachers and friends can discuss the ramifications of the AIDS epidemic on sexual behavior and personalize the need to take precautions when having sexual relations.

Consequently, attempts to increase students' motivation, get them more involved with the issue, is an appropriate intermediate step towards the goal of behavior modification.

Atkin (1981) identifies emotional appeals as useful for stimulating motivation by creating a need where none previously existed and logical appeals as more appropriate for effecting cognitive change. Emotionally charged PSAs, such as those featuring the testimony of persons with AIDS, have the potential to overcome the indifference many people feel (Edgar et al., (1989).

Fear appeals, which depict coffins and images of grim reapers, have been widely used in AIDS media messages. However, fear inducing messages should be used with caution and offer the audience a means of reducing the fear they promote. Humorous appeals have been used successfully in some AIDS messages broadcast in Europe. PSAs in Michigan utilizing guilt as a motivational appeal have been judged effective. These alternatives to fear appeals should be considered when possible (Edgar et al., 1989).

To further improve the chances of successfully communicating about AIDS, more precise targeting of AIDS communication messages can be achieved by acknowledging individual differences. On one level this presents a problem with the cost efficient creation of messages that are uniformly effective for all students. However, for every problem there exists an opportunity. By recognizing these differences and creating communication messages tailored to the needs of each group, message efficacy can actually be enhanced.

Future Research

To address one of the primary limitations of this study, additional studies should be conducted on probability samples to allow more reliable inferences to the larger student population. A longitudinal study is also recommend as a means of monitoring student behaviors over time.

The multiple indicator approach offers the opportunity to assess the effects of what appears to be a loosely related bundle of involvement dimensions on cognitive and conative change. The results presented here provide support for this approach to measuring involvement and imply that different indicators offer greater explanatory potential.

Another area deserving of further research concerns the use of message discrimination as a measure of communication exposure. The advantages of these over "time spent" measures has been documented in the literature, and it has proved to be useful in the evaluation of information campaigns. As Salmon (1986b) notes, there remain several unanswered questions about the concept and how it is defined and operationalized.

Studies of message design represent perhaps the most immediately beneficial research to society. Flora and Maibach (1990) identified emotional appeals as more memorable than rational appeals. Message design studies must also address behavioral outcomes and determine the long term effects of AIDS communication.

All of these lines of inquiry can be followed within the context of a variety of health communication research topics, but AIDS communication is a particularly timely area. We can monitor gains in knowledge and measure modifications in behavior. Communication researchers have an opportunity to test theory and advance our understanding of involvement and message discrimination. All this can be used to enhance the efficacy of the AIDS communication in which we engage and to which we are exposed.

Table 1
Relationship Between AIDS Message Content
and Communication Channels

Message Channels

Content Category	Broadcast	Print	Inter-personal	Total
Transmission	9.7%	18.1%	6.8%	12.3%
	24.1%	59.8%	16.1%	
Prevention	29.5%	21.4%	21.3%	23.9%
	37.7%	36.4%	25.9%	
Treatment	10.2%	10.6%	2.7%	8.2%
	37.9%	52.4%	9.6%	
Deaths	14.1%	7.4%	4.9%	8.7%
	49.2%	34.5%	16.4%	
Prevalence	10.2%	18.0%	7.0%	12.5%
	25.0%	58.7%	16.3%	
Personal Conseq.	10.4%	10.7%	41.9%	19.7%
	16.1%	22.1%	61.8%	
Social Conseq.	7.3%	7.8%	6.3%	7.2%
	30.8%	43.8%	25.3%	
Other	8.4%	6.0%	8.9%	7.6%
	34.0%	32.0%	34.0%	
Total	30.4%	40.6%	29.0%	
Cramer's V=.32				

Note. Cell values represent column and row percentages. N=2024.

Table 2
Factor Analysis of Involvement Items (n=286)

Involvement Statements	Factors: Cognitive	Affective	Behavioral	Communication
Often think about AIDS	.53	.14	.29	.19
Consider my having AIDS	.39	.18	.27	.19
Rarely consider date AIDS	.46	.00	.07	.11
AIDS is not a big problem	.61	-.01	-.04	.11
Am afraid of getting AIDS	.54	.31	.08	-.12
Chances of having AIDS	.03	.72	.02	.01
Chances of getting AIDS	.06	.72	.06	.02
Phoned for AIDS info.	.16	.23	.44	.08
Attended AIDS workshops	-.02	-.04	.49	.11
Asked to share AIDS info.	.16	-.04	.73	.20
Never watch AIDS PSAs[a]	.36	-.20	.09	.34
Afraid of AIDS students[a]	.06	.24	.02	-.20
Read just AIDS headlines	.30	-.17	.11	.42
Seriously discuss AIDS	.17	.11	.33	.49
Pass important AIDS info.	.12	.05	.30	.58
Eigenvalues	1.63	1.39	1.37	1.08
Percent of Variance Explained	10.90	9.30	9.10	7.20

[a] Items deleted due to ambiguous or low item to factor correlations

Table 3
Correlations Among Study Variables (N=289)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Transmission (1)	--																
Prevention (2)	.18**	--															
Treatments (3)	.06	.10*	--														
Deaths (4)	-.04	.02	-.04	--													
Prevalence (5)	.22***	.21***	.06	-.08	--												
Personal Conseq. (6)	.29***	.29***	.13**	.11*	.28***	--											
Social Conseq. (7)	.02	.08	.12*	.08	.07	.10*	--										
Other (8)	.20***	.12*	.07	.05	.10*	.19***	.08	--									
Cognitive Invol. (9)	.05	.08	.09	.20***	.10*	.28***	-.06	.11*	--								
Affective Invol. (10)	.03	.02	.04	-.04	.00	.10*	-.11*	.04	.20***	--							
Behavioral Invol. (11)	.10*	.11*	.12*	.06	.08	.24***	.12*	.18**	.28***	.14**	--						
Commun. Invol. (12)	.15**	.21*	.12*	.06	.12*	.25***	.14**	.13*	.40***	.04	.39***	--					
Print (13)	.56***	.45***	.26***	.15**	.47***	.48***	.31***	.43***	.17**	.05	.19***	.28***	--				
Broadcast (14)	.29***	.50***	.25***	.25***	.31***	.40***	.25***	.17**	.05	-.03	.07	.12*	.31***	--			
Interpersonal (15)	.27***	.47***	.24***	.16**	.30***	.69***	.20***	.27***	.28***	.04	.30***	.28***	.35***	.31***	--		
Behav. change index-Single Partner (16)[a]	.00	.00	.10	-.06	.31**	.16*	.03	.06	.31**	.07	.05	.21*	.18*	-.01	.15	--	
Behav. change index-Multiple Part. (17)[b]	-.01	.03	.08	.19*	.13	.19*	-.02	.08	.35***	-.03	.41***	.31***	.18*	-.13	.24**	na	--

[a] N=93

[b] N=115

na=not an appropriate relational test

*p<.05. **p<.01. ***p<.001.

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Table 4
Stepwise Multiple Regression of Respondent Sexual Behavior Change Scores on the Independent Variables

Control	Step	Independent Variables	R^2	R^2 Change	F
Sex in Year--Yes, One Partner (n=93)	1	Prevalence Messages	.095	.095	9.52**
	2	Cognitive Involvement	.174	.079	9.49***
			Adj. R^2=.16		
Sex in Year--Yes, Multiple Partners (n=115)	1	Behavioral Involvement	.168	.168	22.79***
	2	Cognitive Involvement	.209	.041	14.81***
			Adj. R^2=.20		

**p<.01. ***p<.001.

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